United States Department of Agriculture
Forest Service

Botanical Resources Report **Including Sensitive and Survey and Manage Vascular Plants, Bryophytes, Fungi, and Lichens; and Invasive Plant Risk Assessment**

Chetco Bar Salvage Project

Rogue River-Siskiyou National Forest
Gold Beach Ranger Districts
Curry County, Oregon

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1. Introduction

Botanical resources in this report include plant, lichen and fungi species within the Chetco Bar Salvage Project. This report will analyze effects from specific actions within each alternative to vascular plants, epigeous and hypogeous fungi, lichenized fungi and bryophyte species that are listed as Threatened or Endangered under the Endangered Species Act (ESA), Sensitive by the Regional Forester per Forest Service Manual direction and Survey and Manage (SM) per the Northwest Forest Plan. This resource report will also address the current invasive plant condition in relation to the potential for those species to colonize, spread and occupy ecological niches within and adjacent to the project.

The Environmental Analysis (EA) document for the Chetco Bar Salvage Project incorporates and summarizes the information in this report. This report fulfills requirements outlined in the 1989 Siskiyou Land and Resource Management Plan (LRMP) to complete a Biological Effects (BE) assessment for all Sensitive listed plant species on the forest. It also fulfills policy requirements described in Forest Service Manual 2900 with regard to completing risk assessments for the spread of invasive plant species.

Proposed Project Location

The Chetco Bar Salvage Project is located northeast of Brookings, Oregon, on the Gold Beach Ranger District of the Rogue River- Siskiyou National Forest, Curry County, Oregon. The project area is contained to parts of the Chetco and Pistol River 5th field watersheds.

Effects Analysis Methodology

Area of Effect for Botanical Resources

The geographic boundary for analyzing effects to botanical resources is the proposed salvage units and an additional 100 feet around the perimeter. This area was chosen to include all sensitive species that are known to occur within proposed salvage units, as well as have habitat and a "source" (e.g. potential for seed dispersal) population within close proximity to proposed activities.

The geographic boundary for analyzing the risk of invasive plant infestations is the project boundary, an additional 100 feet around the project area and all haul routes.

Analysis Methodology

Threatened, Endangered, Sensitive (TES) and Invasive plant corporate data is housed within the Forest Service Natural Resource Manager Threatened, Endangered, Sensitive/ Invasive Species database (NRM TESP/IS) and was used for project analysis through ArcMap (GIS). Personal knowledge and local guides supplemented that data. For species designated as regionally sensitive by the Forest Service, information and documents from the interagency special status/sensitive species program (ISSSSP) were used. Access to the website was at http://www.fs.fed.us/r6/sfpnw/issssp/ and is open to the public.

The project area was reviewed using aerial photographs, soils maps and known occurrences to help determine potential habitat for rare species.

Cumulative Effects Boundaries

Activities occurring or reasonably certain to occur on Forest Service lands within the project boundary.

Botanical Resource Indicators and Measures

The following indicator measures related to salvage units located in or near sensitive plant occurrences were used to assess the impacts of the alternatives for each action.

Indicator Measures:

- Potential impacts to sensitive plant population integrity
- Acres of invasive plant infestations within 100 feet of proposed units

Short-term timeframe: 1 year, because it is within the first growing season that impacts to plants could first take effect by decreased numbers of individuals or decreased acres of coverage by individuals.

Long-term timeframe: 25-30 years, because climate change, unforeseeable future projects, demographic changes, etc. make assumptions beyond this timeframe speculative.

Spatial Boundary: units within the Chetco Bar Salvage Project Area, because in general, direct effects are most likely to occur within a zone of 30 feet from the edge of proposed project activities and indirect effects are most likely to occur within a zone of 100 feet. Populations of sensitive plant species on the Forest have typically been mapped with an accuracy of 100 feet, or better. Small mapping errors may mean that sites on the ground are actually slightly different than as mapped in GIS. Additionally, sensitive plant populations may expand or contract over time.

Methodology: GIS analysis of proposed units, buffered by 100 feet, to determine the distance between proposed units and sensitive plant locations known or found during surveys. The analysis considers the type of proposed activity and its potential and likely effects on sensitive plants.

2. Regulatory Framework

Land and Resource Management Plan

The Chetco Bar Salvage Project is subject to the standards and guidelines contained in the Final Environmental Impact Statement Siskiyou National Forest Land and Resource Management Plan (hereafter, referred to as the LRMP) (USDA 1989a) and as amended. The Siskiyou National Forest Land and Resource Management Plan Record of Decision (USDA 1989b) was issued based on the evaluation presented in the 1989 LRMP. Primary amendments are: the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (referred to as the Northwest Forest Plan) (USDA and USDI 1994a).

Forest-wide Standards and Guidelines for TES Plants (see LRMP- IV pg. 26-27, 37)

1. Monitor the effects of management activities on TES plant species. If the results of monitoring show a decline in species viability then, alter the management strategy.

2. Analyze the potential effects of all ground disturbing projects on TES plant species and habitat. Mitigate project effects to avoid a decline in species viability at the Forest level.

3. Map, record, and protect essential habitat for TES plant species. Species management guides should be prepared to address the effects of land management activities on local populations of TES species at a broader scale, and to identify opportunities to enhance and develop habitat locally.

Endangered Species Act

It is mandate that the Forest Service (FS) conduct its activities and programs to assist in the identification and recovery of threatened and endangered plant species and avoid actions which may cause a species to become threatened or endangered.

The Rogue River-Siskiyou National Forest currently has two known and one suspected plant species that are listed as threatened or endangered under the ESA; however, these three plant species have no potential habitat within the proposed project footprint.

The National Forest Management Act of 1976

The National Forest Management Act (NFMA) of 1976 contains language relating to diversity and species viability that guides decisions and management for native plant species on Forest Service lands. The language in the 1982 planning rule that informed the Siskiyou NF LRMP states that "management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species, so that it is at least as great as that which would be expected in a natural forest and the diversity of tree species similar to that existing in the Planning Area."

Invasive Species, EO 13112 of February 3, 1999 as amended, December 05, 2016

Requires federal agencies to prevent the introduction, establishment, and spread of invasive species; detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks; monitor invasive species populations accurately and reliably; and provide for the restoration of native species, ecosystems, and other assets that have been impacted by invasive species.

3. Proposed Action and Alternatives

A detailed description of proposed activities can be found in the Chetco Bar Fire Salvage Project Environmental Assessment (EA), specialist reports and supporting documents on the project website at: http://www.fs.usda.gov/project/?project=53150.

Project Design Criteria for Botanical Resources

Project Design Criteria (PDC) listed below are in addition to standards and guidelines from the Siskiyou National Forest Land and Resource Management Plan (USDA 1989a). The efficacy of these measures was included when assessing effects to botanical resources from proposed activities.

Sensitive Plants

- No new roads or landings would be constructed and no slash piling or ground-based equipment would be used within 100 feet of identified sensitive plant population boundaries. Exceptions would be reviewed by the botanist.
- Vehicles, including off-highway or all-terrain vehicles, would not be operated within identified sensitive plant population boundaries.
- Any new sensitive plant sites or habitat found during implementation would be protected similarly to known populations.

- Implementation of activities including temporary road construction near other documented populations of sensitive plants will be coordinated with the botanist.

Invasive Plants

- Prioritize monitoring and post-treatment of invasive plant species within the project area for at least 5 years after completion.
- Re-use of landings infested with invasive plants would not occur. Avoid these areas for staging and parking areas. Exceptions may be made through coordination with the district invasive plant coordinator. In addition, any new invasive plant infestations found during implementation would be managed similarly.
- To reduce the potential for transport or spread of non-native invasive plants by road construction or logging equipment, the timber sale contract would require provision BT6.35: (1) certification that equipment be clean of all plant or soil material that may result in the establishment or spread of non-native invasive plants; and (2) notification of location where equipment was most recently used. The Forest Service Timber Sale Administrator would certify that equipment is clean of plant and soil material before the equipment enters the project area. Cleaning shall occur off of Federal lands.
- Document all non-native invasive plant infestations identified during implementation by notifying the district invasive plant coordinator.
- To reduce the potential for non-native invasive plant spread through mineral material (i.e. gravel and rock) used on roads and landings, material sources would be inspected by district invasive plant coordinator to ensure materials are weed free. Additionally, the sale contract would include provisions requiring any material from other sources is inspected by the Forest Service and determined to be weed free.
- All equipment and vehicles used at mineral material sites would be cleaned and certified free of all plant or soil material that could contain invasive plant seed or plant parts prior to entrance onto the National Forest. Cleaning means removing all dirt, grease, debris, and materials that may harbor invasive plants and their seeds. This may require the use of a pressure hose. Cleaning would occur off of Federal lands.
- All seed and straw used to reduce erosion potential and reduce risk of non-native invasive plants will be obtained in coordination with the district botanist. Seed will be certified weed free and from local genetic sources.
- An invasive plant locator map would be included in the sale area map and project file to assist in avoidance and monitoring.

4. Affected Environment

This section summarizes the existing landscape condition with relation to Threatened, Endangered and Sensitive (TES) and Survey and Manage listed plant, lichen and fungi species as well as invasive plants. Describing the current condition within the greater Chetco Bar Salvage Project area provides context and establishes a baseline from which to measure effects to the resources covered in this analysis.

Botanical Species of Conservation Concern

Region 6 Sensitive Species

Additional information on regionally sensitive species can be found at the interagency special status/sensitive species program (ISSSSP) website at: http://www.fs.fed.us/r6/sfpnw/issssp/.

The Region 6 Regional Forester Special Status Species List, July 13, 2015, identifies the Rogue River-Siskiyou National Forest (RRSNF) as having 138 special status plant or fungi species documented from well over a thousand known populations. The listed taxa include 2 federally endangered vascular plants, 76 sensitive vascular plants, 14 sensitive bryophytes, 11 sensitive fungi and, 1 sensitive lichen species.

A pre-field review was completed to determine areas of high probability habitat within the project planning area to survey specific sites for sensitive species. Field checks of potential habitat for sensitive species were done during Burned Area Emergency Response (BAER) reconnaissance immediately following the fire. Pre-disturbance surveys have been completed on roughly 1,020 acres of high probability sensitive plant habitat within the project footprint. Surveys will continue to occur through spring of 2018 and if any additional sensitive plant populations are found prior to implementation, mitigations for protection would be developed.

Sensitive Vascular Plants, Bryophytes and Lichens

Table 1. Sensitive plant species known or with potential to occur in Chetco Bar Salvage proposed units and project area.

Species	Habitat/Distribution
Known to occur within the Chetco Bar Salvage project footprint.	
Arctostaphylos hispidula (Gasquet manzanita)	Forest edges, brush fields and barren ridgelines with little to no conifer canopy cover. Often associated with serpentine soils and ultramafic geology, but not always. It is usually found growing with other manzanita species, especially the very common hairy manzanita (Arctostaphylos columbiana). *Arctostaphylos hispidula* is a fire dependent species with refractory seeds (Emerson 2010; Keeley 1991), though the needed intensity level of the fire is not known. It is an endemic species occurring in the western Siskiyou Mountains grading narrowly into the Coastal Range from Coos County, OR south into Humboldt County, CA. There are 10 known occurrences of this species within 100 feet of the Chetco Bar Salvage Project Area, three of which occur within 100 feet of the project footprint, and one of which occurs within a proposed salvage unit.
Known to occur within the Chetco Bar Salvage Project area, with potential to occur within the project footprint.	
Bensoniella oregana (Oregon bensonia)	Seeps, springs, moist meadows and wet roadside ditches along upper slopes and ridges. Range is restricted to the Coast and Siskiyou Mountains In extreme SW Oregon and NW California. Elevations 2,800 to 5,200 feet. There are 4 known occurrences of this species within 100 feet of the Chetco Bar Salvage Project area, but none within the project footprint.
Ericameria arborescens (goldenfleece)	In Oregon, this species is known to occur in openings of Douglas-fir forest; disturbance and fire are necessary for germination. 1200-2700 ft. There are 4 occurrences of this species within 100 feet of the Chetco Bar Salvage Project area. Two of these within 100 feet of the project haul routes on FSR 1107 and FSR1909, but do not occur within any proposed salvage units.
Iliamna latibracteata (California globe-mallow)	This species prefers open canopied conditions but sometimes is found in partial shade. Iliamna latibracteata is found almost exclusively within openings in recently-burned forests dominated by white fir (Abies concolor) or Douglas-fir (Pseudotsuga menziesii). It can occur in the understory of top-killed stands, as well as at edges of or in gaps within live burned stands (Kalt, 2008). Many sites are adjacent to or within riparian areas. It is known to occur from 300-4000 feet in elevation. The species is endemic to the Siskiyou, western Cascade and Coast Range Mountains in Coos, Curry, Douglas, Jackson and Josephine Counties of southwest Oregon. The distribution ranges south to Humboldt County California. There are no known occurrence of this species within the Chetco Bar Salvage area.
Sidalcea malviflora ssp. patula (coast checker bloom)	Coastal. Open woodlands, openings within mixed forests, meadows, or grassy places at low elevations. Often serpentine. From Coos Co. OR south to Humboldt Co. CA There are 3 occurrences of this species within 100 feet of the Chetco Bar Salvage Project area, but none within the project footprint.

Trillium kurabayashii (Siskiyou trillium)	Coniferous forest, woodland, and chaparral at low to mid elevations. Lower Rogue canyon Curry Co., OR; sporadically through CA. There is one known occurrence of this species within 100 feet of the Chetco Bar Salvage Project Area, but none within the project footprint.

Sensitive Fungi

Rare ephemeral fungi, such as gilled mushrooms, coral's, and clubs are treated separately from the above species because of the difficulty in surveying and detecting them prior to projects being implemented. Surveys for species presence are often difficult, because fungi can be seen only when fruiting bodies are produced. Even with above-ground fruiting bodies present, their correlation with the extent and abundance of the fungal organisms underground is unknown (Straatsma and Krisai-Greilhuber 2003). Because of the logistics and costs involved with completing surveys, which takes two years with several visits to each unit, the Forest Service Region 6 policy has been to manage these species at a broader landscape scale by conducting regional "strategic" surveys. These are surveys for the sake of finding new sites, not for clearance of a project. Therefore the effects analysis for fungi is based on existing knowledge of the distribution of each species and focuses on the likelihood of extirpation of a population at a 5th field watershed scale. In accordance with Region 6 Forest Service direction, Sensitive fungi surveys were not conducted in the Chetco Bar Salvage Project.

There are fourteen fungi species listed as Forest Service Region 6 sensitive that are suspected or documented on the Rogue River-Siskiyou National Forest (*Albatrellus avellaneus, Chamonixia caespitosa, Dermocybe humboldtensis, Gastroboletus vividus, Gastrolactarius 7amphorate, Gymnomyces fragrans, Phaeocollybia californica, Pseudorhizina californica, Ramaria amyloidea, Ramaria rubella forma blanda, Rhizopogon chamaleontinus, Rhizopogon ellipsosporus, Rhizopogon exiguous,* and *Stagnicola perplexa*).

None of these fourteen fungi have a reasonable likelihood of occurrence within the project area. There is no suitable habitat in the project area due to fire effects to habitats including loss of host tree and shrub species, significantly modified microclimates, consumption of the woody substrate, forest floor litter, or shrub hosts and damage to mycorrhizae caused by high heat intensity or prolonged heat residence time.

In order to determine the likelihood of finding these Sensitive fungi species in the project area, several documents written by the Region 6 ISSSSP were referenced. These documents include:

- Fungi Effects Analysis Guidelines, 10/2008
- Attachment 1- Likelihood of Occurrence Key, 9/2004
- Attachment 2- Conservation Assessment for Fungi in Region 5 & 6, 7/2007
- Attachment 4 – Potential Impacts to Fungi Table; and Habitat Summary for Sensitive Fungi Species, 2007. (ISSSSP website: http://www.fs.fed.us/r6/sfpnw/issssp/species-index/flora-fungi.shtml)

NWFP Survey and Manage Plants, Lichens, and Fungi

The 1993 Final Environmental Impact Statement (FSEA) and 1994 Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (also known as the Northwest Forest Plan (NWFP)) created the survey and manage standard and guideline for all land allocations on the west side of the Cascades in Oregon, Washington and northern California and east Cascade forests within the range of the northern spotted owl.

The standard and guidelines were created to gain information that could help manage a set of lesser known and possibly rare taxa. Species of fungi, lichens, bryophytes and vascular plants were included to determine the status of their population viability.

A memorandum was released on May 13, 2014 (Forest Service Correspondence, File Code 1950 – Direction Regarding the Survey and Manage Standards and Guidelines), providing direction for implementation of the January 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (USDA and USDI 2001), based on the district court's remedy order issued on February 18, 2014 (Conservation Northwest v. Bonnie, W.WA No. C08-1067-JCC). This remedy order followed after the 9th Circuit Court of Appeals rejected the 2011 Consent Decree executed in resolution of the district court action (Conservation Northwest, et al v. Harris Sherman, et al and D.R. Johnson Company, 715 F.3d. 1181, C.A. 9 (Wash), April 25, 2013).

The January 2001 ROD standards and guidelines and the December 2003 species list are the current management direction. Four categories of projects are exempt from the Survey and Manage standards and guidelines as stipulated by Judge Pechman (October 11, 2006, "Pechman exemptions".)

Within the December 2003 list, there are 12 species with changes in all or a portion of their range that may need special consideration at this time. The species changes included in this report are:

- Fungi: *Clavariadelphus truncatus* (outside Jackson Co. Oregon), *Craterellus tubaeformis* (in Washington and California), *Galerina atkinsoniana*, *Gomphus floccosus*, *Phaeocollybia olivacea*
- Lichens: *Chaenotheca furfuracea*, *Cladonia norvegica*, *Nephroma bellum* (in Oregon Western Cascades and Coast Range Physiographic Provinces; in Washington Western Cascades Physiographic Province, Gifford Pinchot NF), *Nephroma occultum*

The four categories of projects exempt from the Survey and Manage standards and guidelines as stipulated by Judge Pechman (October 11, 2006, "Pechman exemptions") are:

a) Thinning projects in stands younger than 80 years old;

b) Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;

c) Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement of large wood, channel and floodplain reconstruction, or removal of channel diversions; and

d) The portions of projects involving hazardous fuels where prescribed fire is applied. Any portions of a hazardous fuel project involving commercial logging will remain subject to the survey and manage requirements except for thinning of stands younger than 80 years old under subparagraph (a) of this paragraph.

Information is also available at http://www.blm.gov/or/plans/surveyandmanage/.

The 2001 ROD defines Survey and Manage species as species closely associated with late successional or old growth forests whose long term persistence is a concern. Late successional forests are defined as forest stands consisting of trees, structural attributes, supporting biological communities, and processes associated with old-growth or mature forests. Minimum stand ages are

typically 80-130 years, more or less, depending on the site quality, species, rate of stand development, and other factors. Old growth forests are defined as forest stands usually 180-220 years old with moderate to high canopy cover closure, a multi-layered canopy dominated by large overstory trees, high incidence of large trees, heavy accumulations of wood and decaying wood as well as numerous snags.

The Chetco Bar Fire changed the stand conditions in the project area so they are no longer late successional or old growth habitat. This is because most to all large trees are dead, and stand structure has been highly altered by loss of tree canopies, layers of trees and shrubs, down wood and snags.

Seeds, spores, and other propagules of these species may survive to recolonize the forest as it regrows, either by natural regeneration or assisted by tree planting. However, it will be many decades (at least 80 years) before these areas will begin to function as habitat for Survey and Manage species.

No species which require management of known sites (Category D & E) are found in the project area.

Surveys are required for Category A & C species where habitat disturbing activities are likely to have a significant negative impact on species habitat, its life cycle, microclimate, or life support requirements. **No suitable habitat for Category A & C species is found in the project area due to wildfire effects.**

Surveys are required for Category B species (called equivalent effort surveys) where old growth habitat will be disturbed and the disturbance is likely to have a significant negative impact on species habitat, its life cycle, microclimate, or life support requirements. **No suitable habitat for Category B species is found in the project area due to wildfire effects.**

For a full list of Survey and Manage species considered see Appendix A of the Chetco Bar Salvage Project Botanical Resources Report.

Invasive Plant Species

Definition of an Invasive Plant

Those plant species designated as Invasive Plants by the Secretary of Agriculture or by the responsible State official. Invasive Plants generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of a serious insect or disease, or being non-native or newly introduced and not common to the state. Generally, species that can survive and reproduce in a natural setting away from landscape areas are considered invasive.

Existing Condition

Information used in this report includes data already documented prior to the Chetco Bar Fire from ongoing invasive plant inventories as well as data collected during the BAER assessment (Clarno 2017). There are 13 species of Oregon Department of Agriculture prioritized invasive plant species documented within 100 feet of the Chetco Bar Salvage project footprint. These species are currently documented at 50 locations within 100 feet of the project footprint, totaling approximately 53 acres. There are 17 infestations within proposed salvage units totaling approximately 14 acres and including the following species: Bull thistle (*Cirsium vulgare*), Armenian blackberry (*Rubus armeniacus*), cutleaf blackberry (*Rubus laciniatus*), English ivy (*Hedera helix*), scotch broom (*Cytisus scoparius*), tansy ragwort (*Senecio jacobaea*) and yellow star-thistle (*Centaurea solstitialis*) (**Error! Reference source not found.**, **Error!**

Reference source not found.). Most sites have been treated in the past, but time and personnel restraints have not allowed annual monitoring and of all sites as is needed. Annual monitoring and is necessary to continue to control invasive plants within the project area boundary.

The Chetco Bar fire has increased vulnerability of the landscape to invasive plants because of: 1) increased availability of light and nutrients, 2) reduction of competition with native plants for subsurface resources such as nutrients and water, and 3) increased opportunity for dispersal of seeds, including the vectors associated with fire suppression such as seeds from firefighters boots, or contaminated dozers or fire support vehicles. Mitigations were used during the fire suppression activities such as vehicle washing and placing fire camp in an area free of invasive plants, however mitigations are not 100% effective. It should also be noted that where invasive plants existed before the fire, they often expand post-fire. Ground disturbance can create new habitat for invasive species introduced at the time of the activity or at a later date, by equipment, recreational vehicles, animals, wind or water flows.

Invasive plant infestations threaten native plant diversity within the project area. Invasive plant species pose a threat to ecological function due to their ability to displace native species, alter nutrient and fire cycles, and degrade soil structure.

Table 2 Oregon Department of Agriculture listed invasive plant species within the Chetco Bar Salvage Project footprint.

Invasive Plant Species	ODA Designation	Invasiveness	Alt 2- Approximate Acres within Units	Alt 3- Approximate Acres within Units	Chetco Bar Salvage Project Units
Centaurea solstitialis (Yellow Star-thistle)	B	Highly invasive and limited distribution	0.65 acres	0.65 acres	Alt 2 and Alt 3- Unit 117
Cirsium vulgare (bull thistle)	B	Moderately invasive but widespread	0.20 acres	0.20 acres	Alt 2 and Alt 3- Unit 144
Cytisus scoparius (Scotch broom)	B	Moderately invasive but widespread	4.50 acres	3.15 acres	Alt 2- Units 70, 92, 105, 116, 118, 121, 122, 123, 125 128 Alt 3- Units 92, 118, 123
Hedera helix (English Ivy)	B	Highly invasive but widesperad	0.01 acres	0.01 acres	Alt 2 and Alt 3- Unit 74
Rubus armeniacus (Himalayan blackberry)	B	Highly invasive but widespread	1.68 acres	0.24 acres	Alt 2- Unit 123, 118 Alt 3- Unit 123

Rubus laciniatus (cutleaf blackberry)	B	Highly invasive and limited distribution	1.45 acres	1.45 acres	Alt 2 and Alt 3- Unit 70
Senecio jacobaea (tansy ragwort)	B &T	Moderately invasive but widespread	1.95 acres	1.95 acres	Alt 2 and Alt 3- Unit 47, 73, 59, 144
		Total	10.44 acres	7.65 acres	

ODA Definition of Designation:

"A" Listed Weed: A weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent

Recommended action: Infestations are subject to eradication or intensive control when and where found.

"B" Listed Weed: a weed of economic importance which is regionally abundant, but which may have limited distribution in some counties.

Recommended action: Limited to intensive control at the state, county or regional level as determined on a site specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.

"T" Designated Weed: a priority noxious weed designated by the Oregon State Weed Board as a target for which the ODA will develop and implement a statewide management plan. "T" designated noxious weeds are species selected from either the "A" or "B" list.

5. Environmental Consequences

Region 6 Sensitive Species

Effects of Alternatives on Sensitive Plants

The following section provides a discussion of the direct, indirect, and cumulative effects of the action alternatives to sensitive plant species. Those species with the potential to be affected directly or indirectly by the proposed project (those within 100 feet of the project footprint) are discussed in this section.

Direct and Indirect Effects of Alternative 1 – No Action

There would be no direct or indirect effects to sensitive species from Alternative 1 because no actions would take place.

Direct and Indirect Effects of the Action Alternatives (Alternative 2 and 3)

There is one known occurrence of *Arctostaphylos hispidula* (Gasquet manzanita) within the proposed Chetco Bar Salvage unit 148, which is proposed for salvage harvest in both action alternatives. It is very likely that this population survived the Chetco Bar Fire due to the fact that *Arctostaphylos hispidula* is a fire dependent species with refractory seeds (Emerson 2010; Keeley 1991), though the needed intensity level of the fire is not known. PDC's have been designed to protect this site from logging activities. No slash piling or ground-based equipment would be used within 100 feet, and no new roads or landings would be constructed within 100 feet of this site. Under all action alternatives individual plants would be protected from site level logging activities so there would be no cause that would lead to direct effects. Indirect effects could occur if this population is displaced by invasive plants due to introduction from logging activities. While the action alternatives have potential to increase indirect effects from invasive

plant spread, strictly following invasive plant PDC's to prevent introduction of invasive plants to sensitive habitat would reduce this risk.

Bensoniella oregana (Oregon bensonia), *Ericameria arborescens* (goldenfleece), *Iliamna latibracteata* (California globe-mallow), *Sidalcea malviflora ssp. patula* (coast checker bloom) and *Trillium kurabayashii* (Siskiyou trillium) are known within the project area, but have not been identified within the project footprint. *Illiamna latibracteata* and *Ericameria arborescens* are fire-dependent species and seed banks likely exist within the Chetco Bar Fire Area. *Bensoniella oregana* has the potential to occur in seeps, springs, moist meadows within the project area, although no populations have been identified. Under all action alternatives individual plants would be protected from site level logging activities so there would be no cause that would lead to direct effects. Potential habitat for this this species will be excluded from harvest and new disturbance (A-14, H-1). PDC's have been designed to protect these species from logging activities (A-37, SP-3). Any new sensitive plant sites or habitat found during implementation would be protected similarly to known populations. Indirect effects could occur if sensitive plant habitat is displaced by invasive plants due to introduction from logging activities. While the action alternatives have potential to increase indirect effects from invasive plant spread, strictly following invasive plant PDC's to prevent introduction of invasive plants to sensitive habitat would reduce this risk.

Based on this assessment, the action alternatives ***"may impact individuals or habitat, but would not likely contribute to a trend towards federal listing, or cause a loss of viability to the population or species"*** **(MIIH)** for *Arctostaphylos hispidula*, *Bensoniella oregana, Ericameria arborescens, Iliamna latibracteata, Sidalcea malviflora ssp. patula, and Trillium kurabayashii.*

Cumulative Effects of the Action Alternatives (Alternative 2 and 3)

Past management in the cumulative effects analysis area, including the Chetco Bar Fire and fire suppression activities, Danger Tree Abatement Along Roadsides implementation (Categorical Exclusion, 2018) and associated roadwork, and BAER treatments within the Chetco Bar Fire Area have created bare ground and introduced invasive plant propagules that have since colonized parts of the project area including sensitive plant habitat. Continuing influences including this project and danger tree activities as well as ongoing BAER treatments contribute to negative effects on potential sensitive plant habitat. Infestations of invasive plants within the fire perimeter occur along roads, meadows and plantations where fire fighting vehicles, heavy equipment, hoses, and foot traffic undoubtedly picked up seeds and spread them to new areas. New infestations are highly likely and may be detected spring or summer of 2018 and into the future. Non-native invasive plants in sensitive plant habitat have a negative impact on rare plant populations. Non-native invasive plants can outcompete sensitive plants by growing faster, larger and taking up limited resources, particularly nitrogen and water, more efficiently than rare native species.

Effects of Alternatives on Sensitive Fungi

Of the fourteen fungi with potential habitat on the Rogue River-Siskiyou National Forest, none have a reasonable likelihood of occurrence within the project area. There is no suitable habitat in the project area due to fire effects to habitats including loss of host tree and shrub species, significantly modified microclimates, consumption of the woody substrate, forest floor litter, or shrub hosts and damage to mycorrhizae caused by high heat intensity or prolonged heat residence time. For a full list of fungi species considered, see Appendix A of this report.

Direct and Indirect Effects of Alternative 1 – No Action

There would be no direct or indirect effects to sensitive fungi from Alternative 1 because no actions would take place.

Direct and Indirect Effects of the Action Alternatives (Alternative 2 and 3)

There are no known occurrences or potential habitat in the project area. There are no effects to sensitive fungi.

Cumulative Effects of the Action Alternatives (Alternative 2 and 3)

There are no effects to sensitive fungi, therefore there are no cumulative effects.

NWFP Survey and Manage Plants, Lichens and Fungi

There are no plant, lichen or fungi species included in the January 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (USDA and USDI 2001) with the potential to occur within the Chetco Bar Salvage Project area, and therefore no effects from the action alternatives. For a full list of survey and manage species see Appendix A to this report.

Direct and Indirect Effects of Alternative 1 – No Action

There would be no direct or indirect effects to survey and manage species from Alternative 1 because no actions would take place.

Direct and Indirect Effects of the Action Alternatives (Alternative 2 and 3)

There are no known populations or potential habitat in the project area. There are no effects to survey and manage species.

Cumulative Effects of the Action Alternatives (Alternative 2 and 3)

There are no effects to survey and manage species, therefore there are no cumulative effects.

Invasive Species

Direct and Indirect Effects of Alternative 1 – No Action

Because no actions would occur under this alternative, there would be no effects to invasive species from project activities. However, fire alone often promotes invasion of invasive plant species. Burning removes existing vegetation, exposes mineral soil, redistributes soil nitrogen, and post-fire environments are drier and have more direct sunlight, all conditions which can promote non-native plants in comparison to native plant regeneration.

The no action alternative would pose the least risk to invasive plant spread and introduction relative to the proposed action because no additional ground disturbance by machinery and equipment would occur and thus fewer vectors could spread seed. However, non-native invasive plant species are likely to increase overall across the project planning area even without any additional disturbance from proposed actions.

Direct and Indirect Effects of the Action Alternatives (Alternative 2 and 3)

Studies and observations have shown that non-native plants occur more often, and in greater numbers, in areas of anthropogenic disturbance within burned areas (as opposed to undisturbed portions of burned

areas) (Zouhar et al. 2008). Beschta et al. (2004) noted that postfire salvage logging can adversely affect soil integrity and persistence of native plant species and impede ecological recovery after a fire through changes to microclimate and mechanical damage to regenerating plants and soils. Purdon et al. (2004) found reduced abundance of understory vegetation following salvage logging in the forest stands that had experienced high-severity fire in the boreal forests of southern Quebec.

Clearing vegetation for landings is the other ground-disturbing activity proposed under the salvage logging treatments. This activity involves the removal of sizeable (¼ acre to ~ 2 acres) areas of vegetation, creating relatively large locations of intense ground disturbance which would then be vulnerable to new or expanded weed infestation because of: 1) removal of all native vegetation which decreases competition for resources and 2) changes in sunlight levels, nutrient levels, and hydrological patterns that would benefit colonizing invasive species over slower-growing natives. However, there are PDCs, including revegetation of landings with native species that would help prevent infestation if completed quickly enough after implementation.

Reforestation occurring within the project planning area would have minimal effect on the spread or introduction of invasive plants.

Because the majority of documented invasive species sites are located adjacent to roads within the project planning area, road work activities proposed in this alternative would potentially have the most risk for introducing or spreading weeds during implementation. This is true because: 1) ground disturbance that would occur along already infested roadsides would provide more bare ground that could potentially be quickly colonized by the infestations that are already present along the same roadside and 2) vehicles can act as a vector and efficient dispersal mechanism for noxious weed seeds along roadways. Specifically, creating temporary roads off of open roads with infestations along them would create a high risk of infestation along the temporary road, even if it is rehabilitated. Rehabilitation activities would include some ground disturbing actions like waterbarring and recontouring slopes. However, planting and seeding of native plant species is also included in the proposed action for temporary road rehabilitation, which would reduce risk somewhat if implemented the first autumn after implementation. Re-opening closed roads would create a similar immediate risk of invasive plant spread. Specifically, using gravel for road fill could introduce new invasive plants to the roads undergoing road maintenance.

Overall, the Chetco Bar Salvage Project poses a high risk of introduction and spread of invasive plants because the proposed activities are expected to disturb soil, impact some native plant species and introduce vectors for invasive seed spread. Alternative 3 poses a slightly lower risk due to fewer acres of soil disturbance and fewer acres of known invasive plant infestations within salvage units (7.65 acres in Alternative 3 and 10.44 acres in Alternative 2, Table 2).

These risks would be somewhat reduced by project design criteria such as washing heavy equipment before going off-road, and consulting the invasive species coordinator before brushing and blading, and seeding with native plant species in areas of ground disturbance as well as Early Detection, Rapid Response surveys. These project design criteria would prevent some but not all spread of invasive plant species due to the proposed actions in the action alternatives. The majority of effects would be long-term (decades or more). Although the expansion and contraction of a weed site may depend on the species and its ecology, most, if not all, of the invasive species present (or any new infestations) within the project planning area would persist for more than the immediate two growing seasons after the implementation of the proposed salvage treatments.

Cumulative Effects of the Action Alternatives (Alternative 2 and 3)

The risk of invasive plant spread from the current Danger Tree Abatement Along Roadsides implementation (Categorical Exclusion, 2018) is compounded by the risk of the proposed action because the vehicles and heavy equipment used in the danger tree mitigation may have introduced or spread invasive plants that would then be present during the implementation of Chetco Bar Salvage. Vehicles and equipment would be using the same routes during these two projects, thus increasing the risk of invasive plant spread.

BAER Early Detection, Rapid Response (EDRR) invasive plant surveys and treatments are planned for spring and summer 2018. These treatments will reduce the risk of invasive plant spread from this project as well as danger tree abatement along roadsides.

Ongoing recreation activities have and will continue to occur, including hunting and dispersed camping. Recreational activities can contribute to the introduction and spread of invasive plants because vehicles, people and animals can act as vectors as they travel through the forest.

Direct and indirect effects outlined above coupled with ongoing effects from Danger Tree Abatement Along Roadsides will result in cumulative effects from the implementation of this project. Project design criteria such as washing heavy equipment before going off-road, and consulting the invasive species coordinator before brushing and blading, and seeding with native plant species in areas of ground disturbance as well as Early Detection, Rapid Response surveys would help ameliorate these effects as much as is possible.

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